Topic of Study – Magnets

 **Introduction**	Children are fascinated by magnets. To them, magnets seem to have almost magical properties. They are able to see magnets attracting certain objects but not others. However, they may not understand why this happens. Preschool children simply need opportunities to explore and experiment with magnets as a foundation for learning more about them during science classes they will have later in school.
 **Big Ideas**	Here are two big ideas about magnets you can help children explore: ➢ Magnets make things move without being touched ➢ Magnets attract objects made of iron and steel
 **Materials to Collect and Make**	• Collection of magnets and/or magnet wands • Magnetic storytelling figures • Magnetic nursery rhyme figures • Magnetic storyboards • Magnetic marker boards • Magnetic tape • Refrigerator magnets • Cookie sheet (steel) • Paper plate • Sand (small amount) • Shoebox lid • Washers • Steel paper clips • Pot holders with magnets attached • Magnetic alphabet letters, both upper and lower case • Magnetic numerals • Fishing poles made by attaching a string with a magnet at the end of it to either a dowel rod or a stick • Divided dog dish • Magnet manipulatives

Introducing and Concluding the Topic

Introduction: Finding out What Children Know about Magnets

Benchmark: 3.5 Understands that print conveys a message
5.8 Participates in group discussion
3.23 Shows awareness of cause-effect relationships

To introduce the topic of "Magnets" you need to find out what children already know about the topic. This allows you to build on your children's experiences. It also helps create an interest in the topic. Here's how to begin.

- Gather the children in a group. Say, "For the next two days we're going to be learning about magnets."
- Ask if anyone knows what a magnet is and allow children to tell you what they know about magnets.
- Tell children that they will make their own magnet as a way to help them learn about magnets.
- Give each child a craft stick and a piece of magnetic tape to attach to the stick.
- Explain to them that they now have a magnet.
- Give each child a steel paper clip and ask them to put in on the floor and to hold the magnet stick just above the paper clip, slowly moving the stick back and forth.
- Invite children to tell you what happened. [The magnetic stick attracted (picked up) the paper clip.]
- Say, "You now know that a magnet will attract a paper clip. We'll find out even more about magnets in the next two days.

Conclusion: Finding out What Children Have Learned about Magnets

- Gather the children in a group at the conclusion of the study about magnets.
- Write on chart paper, chalkboard or marker board, "Things We Learned about Magnets."
- Invite children to tell you some things they have learned about magnets. Recall with them that first they made their own magnet and learned that magnets attract paper clips. You may have to ask prompt questions such as, "What are some other things we learned that magnets will attract?" "What are some things we discovered that magnets will not attract?"
- Make a list of all the things children learned about magnets and say, "Here are some new things you learned about magnets," as you read the list with them.

Reading Books with Children

Teacher Note: Curriculum developers were unable to locate any books about magnets that were appropriate for preschool children.

Language Materials and Activities

Benchmark: 3.1 Shows enjoyment of books and stories and discussion of them

- Present a familiar story to children using magnetic storytelling figures on a magnetic storyboard.
- Follow up by asking children why they think the storytelling figures stayed on the board. Accept all answers.
- Ask children if they think felt storytelling figures will stay on the board. Again, accept all answers and say, "Let's find out."
- Place felt figures on magnetic board (They will fall off.)
- Allow children to examine both the felt and the magnetic figures and discover that the figures that stay on the board have a magnetic strip and the felt figures do not.

Additional Benchmarks: 3.22 Makes comparisons (scientific process: comparing)
3.23 Shows awareness of cause-effect relationships

Benchmark: 3.7 Identifies letters and signs in the environment

Activity: Fishing for the Alphabet

- Make fishing poles by attaching a string with a magnet attached to the end of it to a dowel rod or a stick.
- Create a fishing pond by taping off an area of the floor.
- Scatter magnetic letters (upper case) in the pond. Choose letters so that each child can "catch" the first letter of his/her name.
- Begin by asking, "Jamelia, can you tell me the first letter of your name? Now can you catch the first letter of your name?"

Teacher Note: For children needing a visual cue, show the child his/her name card and point to the first letter of the name. Say, "That's a J. Now can you catch the letter J?"

Benchmark: 5.1 Demonstrates phonological awareness (hearing and recognizing the sounds of language)
5.5 Participates in songs, finger plays, rhyming activities, and games

- Place magnetic nursery rhyme figures on a magnetic board and you and children say the rhyme together.
- Place the magnetic nursery rhymes figures and board in the library for children to use independently.

Science / Discovery and Math

Benchmarks: 3.20 Uses senses to learn about the environment and to collect data (scientific process: observing)
3.21 Uses words to describe the characteristics of objects (scientific process: communicating)
3.23 Shows awareness of cause-effect relationships

Activity: Magnets, Nails and Water

- Provide magnets and nails and allow children to experiment with the two objects. Children will discover that magnets will attract nails.
- Ask children what they think will happen if you put the nail in a glass of water. Will the magnet attract the nail? Accept all answers.
- Place a nail in a glass of water and allow children to use a magnet to see if they can make the nail move.
- Show them how to move the magnet around the glass to make the nail "dance."

- Discuss with them what happened between the magnet and the nail in the water.
- Conclude with the children that a magnet's force can go through different materials such as water.

Activity: Magnet Detectives

- Place a layer of sand in a shoebox lid.
- Hide two steel paper clips and a nail under the sand. Be sure not to bury the objects too deeply.
- Tell children they will be magnet detectives trying to find hidden treasure.
- Allow each child a turn using a magnet to try and find the treasure buried in the sand.
- Guide children to slide the magnet slowly above the surface of the sand.
- Conclude with children that a magnet's power will go through different materials such as sand.

Teacher note: Children will enjoy being "magnet detectives" on their own. Allow them to add other objects to see if magnets will attract them.

Activity: Follow the path

- Draw a simple path on an 8 ½" x 11" sheet of paper. Write "Start here" at the start of the path and "Finish Line' at the end of the path.
- Lay the paper on a steel cookie sheet.
- Place a large steel paper clip or washer on the starting line.
- Hold the cookie sheet 6-8" above the table. Ask a child to hold a magnet underneath the cookie sheet and drag it along to try and keep the paper clip or washer on the path from the start to the finish line.

Activity: Magnet Sorting Game

- Place a divided dog dish on the science/discovery table
- Mark one side of the dish "Yes" and one side "No."
- Place a variety of objects on the table; some that magnets will attract (pick up) and some they will not: steel paper clips, washers, nails, magnetic alphabet letters and numerals, steel wool, cotton balls, small pieces of paper, pieces of felt, plastic spoon, cork.
- Invite children to predict which objects magnets will attract and which objects magnets will not attract.
- Challenge children to experiment to see if their predictions were correct and place the objects that magnets attract in the "yes" section and objects that magnet will not attract in the "no" section of the dog bowl.

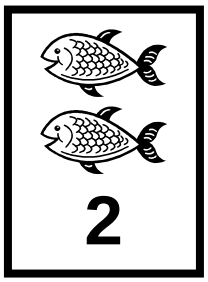
Benchmark: 3.15 Demonstrates an understanding of number (how many) and numeral (3 is a numeral) relationship

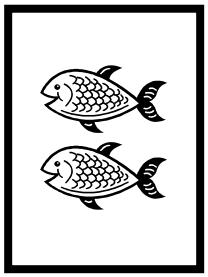
Activity: Fishing for Numerals

- Tape off an area of the floor for a fishing pond.
- Scatter plastic magnetic numerals in the pond. Begin with numerals children

recognize, then add additional ones. For example, begin with 1 through 5, then gradually add 6 through 10.
- Allow children to use a magnetic fishing pole to fish for the numerals and name those they catch.

Try this:
- Make number/numeral cards from 1 to 10, for example. Place one fish and the numeral "1" on a card, two fish and the numeral "2" on a card, for example.





- Children fish for a numeral, name it and place it on the correct card.
- Make number cards without numerals on them for children who are ready for this more advanced activity. You may need to help them count the fish on the card.

Teacher Note: This same activity can be adapted as a way for children to name shapes and colors, for example.

Learning Centers

Benchmark: 2.10 Explores and manipulates art media

Art Center
Painting with Magnets
- Place a sheet of paper on a steel cookie sheet.
- Allow children to select a color of paint and squirt a few drops on the paper and place a washer in the paint.
- Show children how to press a magnet against the bottom of the cookie sheet and use it to move the washer across the paper.
- Observe as children discover that as the washer moves, it will make a design.

Teacher Note: Invite children to experiment with another way to paint with magnets.

- Lay a circle of white paper in a paper plate.
- Ask the children to dip a large steel washer in some paint and place it on the paper.
- Suggest that they hold the plate in one hand and the magnet in the other and press the magnet against the bottom of the plate and use it to move the washer across the paper.
- Observe as children discover that as the washer moves, it will leave a trail of paint.
- Allow children to dip the washer in the paint as often as necessary to complete the painting.

Teacher Note: Conduct this activity near a sink or have a small tub of water and paper towels nearby for cleaning hands.

Benchmark: 3.23 Shows awareness of cause-effect relationship

Block Center

- Attach a magnetic strip or disk magnet to the back of a toy car or truck and a metal washer to the front of a lightweight second car.
- Ask children which car they think can tow the other.
- Allow children to experiment and discover that the front car can tow the second.

Library/Book Center

- Add magnetic storytelling figures and a magnetic storyboard to the library center and allow children to play with them on their own.
- Add magnetic nursery rhyme figures and a magnetic board to the library center and allow children to play with them on their own.

Home Living/Dramatic Play

- Add a steel cookie sheet
- Add refrigerator magnets
- Add pot holders with a magnet attached

Manipulatives

- Add a Magna-Doodle Board
- Add magnet faces
- Add Magnet Discovery Board
- Add magnetic animals, vehicles, building shapes and puzzles

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Benchmark: 3.23 Shows awareness of cause-effect relationships

Water Tub or Table

- Use a Styrofoam bowl for a boat
- Slide a large steel paper clip onto the rim of the bowl.
- Place the boat in the water table or tub.
- Invite children to take turns holding a magnet a short distance from the boat. (Make sure the magnet is strong enough to attract the paper clip)
- Observe and listen to the children as they discover that the magnet can change the direction of the boat without touching it directly

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Quiet Corner

- Create a quiet corner in your classroom; a place where children can go to be alone and to get away from the stresses of group living.
- Place soft items in the quiet corner. Carpet on the floor, soft pillows, and soft and cuddly stuffed animals or dolls are examples.
- Discuss with children when they might want to go to the quiet corner. When they are angry and need to get away from the source of their anger? When they are sad and need to be alone? When the room gets too noisy and they need a quiet spot?
- Explain to children that the quiet corner is for one child at a time.

Teacher Note: Make sure this area can be supervised by the adults in the classroom at all times.

 **Transition Activities**	**Benchmark: 3.7 Identifies letters and signs in the environment** **Activity: Letters and Names** • Gather magnetic alphabet letters (upper case) that represent the first letter of each child's name in the group. • Place a letter on a magnetic board and say, "If your name begins with this letter (or if your name begins with a "B") you may choose a learning center." **Teacher Note:** Use this activity for transitioning children to different activities.
 **Family Activities**	Send home a note to parents stating for the next couple of days, the children will be learning about magnets. Suggest some ways families can be involved in the topic of study. • Place refrigerator magnets on the refrigerator and allow children to play with them. • Allow children to place the refrigerator magnets on other surfaces to determine if the magnets will stay on them. • Place magnetic alphabet letters (upper and lower case) on refrigerator and involve children in finding the letters in their name. Use an upper case letter for the first letter and lower case letters for the remaining letters. • Place magnetic numerals on refrigerator and let children play with them.
Additional Teacher Notes	**Additional Teacher Notes** • Magnets can be used on sides of filing cabinets or metal desks. • Your children may discover that magnets sometimes repel rather than attract objects. When repelling occurs the objects feel like they are pushing against each other. Simply state that magnets repel as well as attract. • Try some of the activities in advance to be sure they will work. For example, you will want to make sure the magnets are strong enough to attract the designated objects. • Include magnetic manipulatives and activities throughout the year. • Include classroom favorite books, songs and finger plays in your activity plans.